THE VETERINARY RECORD

A Weekly Journal for the Profession.

No. 637. SEPTEMBER 22, 1900. VOL. XIII.

THE CAMBRIDGE CASE.

We have published a number of letters on this case—some, we think, deserving of notice, others intemperate, and ignorant of the matter which they presume to discuss. The facts are very simple. The Registration Committee reported to the Council that, as the result of an enquiry, they found a M.R.C.V.S. guilty of a charge "of conduct disgraceful to him in a professional respect." The Council declined to inflict any punishment.

It is impossible to discuss the rights and wrongs of this question without knowledge of the facts. The proceedings of committees are properly not published. Meetings of Council are reported fully, and a great deal more than was necessary came out at the Council.

If any wrong has been done the Council is to blame, but all of us outside the Council are in the dark as to the facts. We must either allow that the Council knows better than we do or that its members are unfit for their position—a rather hasty conclusion

It must be remembered that the verdict given by the Committee was not unanimous—it was passed by a majority of one. There was a very small attendance at the Committee, only five members we think. The majority of the Council could know nothing of the facts save by reading the shorthand reporter's notes of the proceedings in Committee. We are assured by two prominent members of Council that those notes disclosed so weak a case that they would "on such evidence alone decline to hang a cat."

We endeavour to give publicity to any and all honest complaints, but unless there is some means of publishing the whole facts we must decline further correspondence on the matter. The Council has determined the case, and action should now not be by letters– mostly unsigned—but by direct application to the Council.

ARMY HORSES.

How easy it is to base arguments upon opinions, and how difficult to obtain facts! Last week we republished an article by the well informed military correspondent of *The Daily Telegraph* in which this paragraph occurs:—"I am afraid the consensus of opinion among officers who have had most to do with them is against the Argentine pony as at present bred and presented for service. . . . He is soft-hearted and, when once tired, is apt to lay him down and die, without an effort." This is precisely the experience of the "Argentines" obtained by the London cab trade, a member of which described them thus —"They take six months to break and then are absolutely useless."

Compare this with a statement made by Mr. C. W. Tindal at the Buxton Horse Show:—"Eight thousand of the best and most serviceable horses which we have had in the South African campaign are a lot which cost us in Buenos Ayres £8 each. These have been the most satisfactory animals we have had in the whole of the campaign."

Making every allowance for ignorance and prejudice it is impossible to reconcile two such opposite statements. Does anyone know the truth? The question is of the greatest importance to this country. If the most satisfactory horse for war can be delivered in South Africa ready for work at £14 each, and if these animals can be obtained in sufficient quantities in Buenos Ayres, it is ridiculously absurd for men in positions of authority to rave about the advisability of breeding ponies in Great Britain. No man in this country can make a profit by breeding butchers' cobs and unless a long price can be given by the Army for infantry ponies, it is cruel to encourage the manufacture of undersized animals. So long as the Argentine can send "the most satisfactory" at £14 a head, we may be certain the home price will not be remunerative.

A VETERINARY MEDICAL ASSOCIATION FOR NORTH WALES.

For some time the members of the profession practising in North Wales have felt the want of an Association within a reasonable distance, and during the past four weeks the matter has been put into a practical form by Mr. Trevor Williams, M.R.C.V.S., of Llangefni, who has spared neither time nor trouble to make the scheme a success. Mr. Williams sent circulars to all the veterinary surgeons in North Wales, and at a preliminary meeting held at Garwen the framework was drawn up.

The first general meeting was held at Llangefni (Isle of Anglesey) on Tuesday last, about twenty gentlemen being present. Officers were selected and a practieal demonstration was given, the Society receiving a most enthusiastic and encouraging start.

There can be no question of the benefit of Associations of this kind where members can meet to discuss points of professional interest and importance. They bring members into friendly contact with one another, allow opportunities for exchange of ideas, and undoubtedly help forward the true interests of the profession.

The initiator is to be congratulated upon the care and forethought whereby he made every step of the arrangements a success, and the energy with which he carried out the amount of work which the foundation of a new Society necessitates.

The Society has our best wishes for its future prosperity. A full account of the first meeting will appear shortly.

ABSTRACTS FROM FOREIGN JOURNALS.

TREATMENT OF GATHERED NAIL WOUNDS WITH PURE LACTIC ACID.—BY MM. GUILLEMAIN and CADIX, 3rd Chasseurs.

Having obtained good results and rapid cure in a case of multiple fistula in the face of a dog by the injection of pure lactic acid, we were led to try it in the treatment of gathered nail.

The foot is carefully cleaned and washed with a solution of corrosive sublimate. The horn round the puncture is thinned down, and removed with a *feuille de sauge* and rat-toothed forceps.

The foot is held up with the sole level and the lactic acid poured on to the wound. After waiting a short time a pledget of tow that has been previously boiled and dipped in the acid is inserted into the wound as deeply as possible. An ordinary wire nail that has first been passed through a flame is a convenient instrument for this purpose. If the lameness is very great a linseed meal poultice made with any strong antiseptic can be applied. If there is only slight lameness a dressing maintained by cross splints is sufficient.

The next day the pledget is removed and usually it is found to be dry, the wound is again dressed with the lactic acid. A grooved director passed to the bottom of the wound will facilitate the acid penetrating to the bottom. If the case is a bad one, the pledget and poultice can be reapplied. Two applications usually suffice, but if on the third day pain is not diminished it may be necessary to apply it again.

During the past 12 months we have treated 15 cases by this method, with an average of 7 days on the sick list. Most of the accidents were recent and severe with great lameness.

Case I, June 20th, gathered nail near hind, to outside, great lameness. The horn was cut away and a poultice with antiseptic dressing applied.

On the 25th the lameness was more marked, great pain on standing on the foot, and weight could only be borne on the toe. The coronet and pastern were hot and swollen. As it was thought that the flexor tendon was injured at its insertion into the pedal bone, the partial operation for exposing it was performed, the wound being filled up with pledgets of absorbent cotton and lactic acid. Hot cresyl foot baths were ordered, and for 12 days the dressing removed every other day.

On June 30th weight was put on the whole sole of the foot.

On July 12th, the wound having granulated up with but insignificant suppuration the patient was turned out to grass, and in the first week of August taken again into work.

Case II., September 2nd, gathered nail to inside of off hind foot, close to point of frog. The horn was thinned and removed and the lactic acid applied.

September 3rd. The toe only of the foot is placed on the ground. The wound redressed with lactic acid but no pledget used.

September 4th. When standing still the whole of the foot is brought to the ground.

September 5th. When moved the whole foot is brought to the ground. The dressing is removed and lactic acid reapplied, no trace of suppuration.

September 7th. A tar dressing applied.

September 8th. Discharged for work.

Case III., March 31st, gathered nail off fore to outside a little behind the point of the frog. Great pain and lameness, inability to bear any weight on the foot, the point of the toe only coming in contact with the ground. The horn was removed, lactic acid applied with a pledget of tow, and the foot put into a poultice made up with lysol.

April 1st. No suppuration, but great lameness, a second pledget and lactic acid introduced as deeply as possible into the wound, and the lysol poultice reapplied.

April 2nd. Weight put on to the foot when standing. The poultice and pledget removed, no trace of suppuration, pledget of absorbent wool, lactic acid, and poultice reapplied.

April 3rd. Weight freely put on to the foot during rest, but considerable lameness when moved. The foot reshod, and the wound covered with a layer of cotton saturated with lactic acid. The dressing completed with a tow pad kept in its place with crossed splints. The case improved daily and was discharged for work, April 6th.

From *Recueil de Médecine Vétérinaire*, Aug. 30, 1900.

JOSHUA A. NUNN, Vet.-Col., A.V.D.

LAPAROTOMY AS AN EXPLORATIVE OPERATION IN DISEASES OF THE FEMALE SEXUAL ORGANS.—By M. G. DE BRUIN.

(*Continued from p. 131.*)

Indications in the Dog.—The field for taking advantage of this operation is greater here, and the veterinary surgeon will more often have the opportunity of performing it in this animal. In the cow the question of £ s. d. comes so often into prominence that the owner prefers to slaughter the animal rather than have her operated on; in the bitch the owner will often have everything possible done to save the life of the patient.

1. *Closure of the os uteri at the full period of pregnancy.*—In many cases diagnosis may be made by ananmesis and external indications—condition of the mammæ, palpation of the abdomen. It should be remembered, however, that in bitches when on heat lactation may occur. If the animal suffers little it is just as well to await the mummification process. If the condition, however, is that the abdomen is tense, temperature high, and the general state soporific, laparotomy ought to be resorted to at once. In extending perimetritis this must then be the prelude to hysterectomy. The fœtuses may, however, die at an early period and cause changes which endanger the life of the mother. In the fifth week of pregnancy death of the fœtuses may occur and mummification or maceration ensue thereon, and later on a chronic illness may occur which finally causes the death of the animal. Diagnosis *intra vitam* is not always easy. The owner generally tells us

that the mammæ are swollen and that there is milk at the teats, and in his opinion the animal has become leaner and suffered for some days from constipation. By palpation one feels in the abdomen the ampullæ lying in the form of a rose wreath which at this time extend rather for forwards. Hysterectomy must follow laparotomy here, which on account of the adhesions (result of a perimetritis) present is not always an easy operation.

(This operation might well be extended to the children's pet and old maid's companion, viz., the goat, in which animal closure of the os is by no means uncommon. In the sheep, too, the operation might be useful though it is probable the bill for a goat would be paid before that for a sheep. Laparotomy would probably precede Cæsarean section and hysterectomy. Trans.)

2. *Torsion of one or several ampullæ.*—The divided uterus of the dog has no body of the uterus proper. In the neighbourhood of the neck the uterus is divided into two horns. Each horn has ampullæ-like extensions three to five in number, in which the young lie at the time of pregnancy. Between two ampullæ the horn is constricted. This anatomical peculiarity makes it possible for one or several ampullæ to be twisted round its long axis. A certain diagnosis is only possible by means of laparotomy. If as a result of the twisting one finds that perimetritis and gangrene have occurred then resection of this horn of the uterus is indicated.

3. *As an introductory operation to cystopexia in a perineal hernia.*—Hendrick has performed the operation of cystopexia in the dog and successfully reduced a perineal hernia by fastening the urinary bladder to the abdominal wall in the neighbourhood of the anterior edge of the pubic symphysis. It must be understood, however, that success can only be hoped for if the contents of the hernial sac consists of bladder; if intestine is there nothing is gained. In our domain the employment of explorative laparotomy is necessarily limited, it can however be employed on many more occasions than those recorded here. I recollect diagnosing intussusception of the intestine, diagnosing and remedying torsion of the uterus and also hypophrenic abscesses. In dogs also this operation is very useful if palpation does not certainly assure us that there is a foreign body in the abdominal cavity.

It ought to be distinctly understood that explorative laparotomy should be conducted only when there are distinct indications for its necessity. If the therapeutist does, however, undertake the operation without symptoms and appearances conferring on him the right to do so, disagreeable contingencies may occur. It is on this account necessary that one should study the bearings of laparotomy in the post-mortem room. In cattle one's hand and arm can be used, in small domesticated animals the two fingers suffice. One can in this manner palpate all parts of the abdomen if one presses the belly with the other hand. Is narcosis necessary in this operation? In cattle certainly not; the operation can be performed with the animal standing if sufficiently restrained. In dogs one can likewise operate without narcosis, although in every case Schleich's infiltration anæsthesia of chloroform narcosis is preferable. Cats are best anæsthetised by a mixture of chloroform and æther in equal proportions.

The severe restraint we have to put on this animal without anæsthetics makes narcosis doubly valuable. The after effects of this mixture last no longer in cats than in other animals. For a quiet operation it is necessary, however, that they be fully narcotised. *ex Berliner Thierarzt. Woch.*

G. M.

VETERINARY SOCIETIES.

THE VETERINARY MEDICAL ASSOCIATION OF IRELAND.

The August meeting was held at the Gresham Hotel, Dublin, on Tuesday, August 28th at 7.30 p.m.; the following members were present:—M. Hedley (Chairman), J. D. Richardson, A. J. Beckett, E. C. Winter, H. S. Allen, A. Dobbyn, W. Pallin, F. C. Mason, F. Kerr, C. Allen, T. D. Lambert, J. V. Daly, P. J. Howard, W. A. Byrne, S. T. Groome, R. Malone, D. Hamilton, J. J. Kelly, J. R. Lewis, Vet.-Col. C. Steel, C. Rea, J. McKenny. The following visitors were present: J. Pethick, Plymouth; J. Holland, Athy; G. A. Banham, Cambridge; F. L. Gooch, Stamford; N. Almond, Chelmsford; J. A. Collings, Exeter; J. E. Bell, Carlisle; T. Dawson, Pontefract; J. C. James, Thornbury; H. Olver, Tamworth; J. Varney, Winslow; W. F. Oliver, T. G. Doyle, G. Wartnaby, Burton-on-Trent; T. Olver, Truro; D. G. Davies, Swansea; T. S. Price, W. L. Harrison, H. A. Woodruff (R.V.C.), W. A. South, W. Hunting, London; H. Hunter, Newcastle-on-Tyne; D. Pugh, Sevenoaks; J. F. Healy, Midleton; J. M. Ryan, Limerick; W. Russell, Cork; W. Robb, Glasgow; D. Hamilton, Hamilton; F. G. Samson, Mitcham; J. R. U. Dewar, Edinburgh; J. Thompson, Aberdeen; W. H. Bloye, Plymouth; J. S. Lloyd, Manchester; E. P. Edwards, Mold; G. H. Elder, Taunton; P. G. Bond, Plymouth; J. Cooke, Scarboro'.

Professor A. E. METTAM, Principal of the Royal Veterinary College of Ireland, who was nominated for membership by Mr. M. Hedley, and seconded by Mr. J. McKenny, was unanimously elected.

The following gentlemen were nominated for election:

Mr. J. W. NOLANS proposed by Mr. J. McKenny, and seconded by Mr. S. T. Groome.

Mr. J. M. RYAN proposed by Mr. W. A. Byrne, seconded by Mr. C. Allen.

Mr. J. F. HEALY proposed by Mr. S. T. Groome, seconded by Mr. F. Kerr.

Mr. J. HOLLAND proposed by Mr. E. C. Winter, seconded by Mr. J. D. Richardson.

Mr. W. RUSSELL, proposed by Mr. S. T. Groome, seconded by Mr. W. A. Byrne.

REMARKS ON THE DIAGNOSIS AND TREATMENT OF THE GASTRIC AND INTESTINAL AFFECTIONS OF THE HORSE.

By E. WALLIS HOARE, F.R.C.V.S.

Mr. Chairman and Gentlemen,—In the present scientific age the race after micro-organisms bids fair to eclipse the study of clinical medicine, and commonplace diseases do not receive the amount of investigation which they merit. It cannot be said that our knowledge of such affections has yet reached the acme of perfection, because we are almost daily convinced of the amount of information we lack, with reference to the

diagnosis of even ordinary diseases. And, as rational treatment depends on having our diagnosis as correct as possible, it follows that we should devote our energies to the interpretation and appreciation of symptoms, and to the careful observation of the clinical phenomena of diseases.

Gastric and intestinal diseases form a large proportion of the cases that come under the notice of the town practitioner. From a clinical point of view they possess features of marked interest, and offer a wide field for investigation with reference to their prevention, diagnosis and treatment.

We cannot say that, so far as diagnosis is concerned, we have advanced to any great extent in recent times, and we must admit, if we are honest, that symptoms are often deceptive, erroneous diagnosis of frequent occurrence, and, as a result, treatment not all that could be desired. Indeed, after a consideration of a series of cases of abdominal affections, in which post-mortem examinations have shattered our faith in what we believed to be diagnostic symptoms, we are inclined to say with Hippocrates "Experience is fallacious and judgment difficult."

Have we any means at our disposal to improve our knowledge in these respects, and can we ever hope to be able to diagnose these affections in a tolerably accurate manner? Both of these queries can be answered in a positive manner, but the second obviously depends on a special study of the first.

Two things are essential to improve our knowledge of diagnosis in the diseases under notice. In the first place, individual investigation must be carried out; the symptoms observed must be compared with the lesions found at the autopsy, any special symptom being noted, and its cause sought for. We cannot draw safe conclusions from single cases, nor term certain symptoms diagnostic which may have been pure coincidences. A series of cases of the same affection must be collected, their clinical history studied and careful post-mortem examinations made in every instance that dies. If on analysing these cases we find a certain symptom or set of symptoms present, and a lesion to account for the presence of such, of course excluding those which are common to many affections, we shall be on the right road to effect our purpose.

In such an investigation we need not accept recognised dogmas, nor implicitly believe in the clinical pictures of standard text-books, or in the stereotyped symptoms so faithfully handed down from one generation of practitioners to another. Believing that "A wise prejudice and a judicious scepticism are the foundations of our knowledge" we should observe and think for ourselves.

The next important attribute after individual investigation, is discussion and criticism, and a comparison of experiences under a variety of circumstances. Clinical observation to be of real value must be thorough and accurate, and conclusions derived therefrom must stand the test of criticism, and the judgment of minds matured by years of experience. It has been said that no practical benefits can result from the study of gastric and intestinal affections in the horse, in consequence of the symptoms either being misleading or common to many different forms of disease, while the treatment varies little, or in other words very little can be done in some instances beyond adopting measures for the relief of pain. Such, although true to a certain extent, should not deter us from a diligent study of the subject, for we should not remain satisfied with our present position as regards diagnosis and treatment. No doubt there are many who fall into the rut of every day experience and find it easier to divide abdominal affections in an arbitrary manner rather than to trouble their minds by endeavouring to improve their knowledge. Thus when a case showing abdominal pain yields to treatment and recovers it is designated Colic. If serious symptoms occur with acute pain, and anodynes fail to give relief, then the case is said to be Enteritis. Again, if very violent symptoms of pain are observed, with peculiar attitudes and postures of the patient, a diagnosis of "twist" of the intestine is given. Admitting that the above may satisfy some individuals, it by no means follows that we should rest content, as by constant observation and diligent research we are sure to discover some methods of diagnosis that have previously remained unnoticed.

In order to be as brief as possible, as the subject is an extensive one, I intend to divide it into different sections and, with a view to facilitate discussion, I shall place some of the important points in the form of queries, the answers to which I hope you will render complete as they will prove of great practical value as aids to diagnosis and treatment.

(*A.*) Is it possible to distinguish between acute affections of the stomach and those of the intestines, and can we make a differential diagnosis of the various gastric diseases?

If we attend the case early and are enabled to obtain its true history it is possible that we may differentiate between gastric and intestinal affections.

I say only that it is possible, because in very many cases post-mortem examinations have demonstrated how very erroneous diagnosis has been in this respect. No doubt in some gastric affections when cerebral complications are present we can arrive at a correct diagnosis, while in others the symptoms presented point to intestinal just as much as to gastric lesions. Again, we have to remember that the administration of large doses of opiates masks the symptoms, and we are inclined to mistake the physiological actions of narcotics for the symptoms of the disease.

The symptoms usually given as indicative of gastric affections are not always reliable, such as constant pawing, sweating over the sides of the neck and shoulder, muscular tremors of the same region, persistent pain, etc. Let us refer to the various gastric affections in order to ascertain if we can collect any diagnostic symptoms. Of these affections the most important are:—(1) Acute gastritis; (2) acute impaction of the stomach, with or without gastritis; (3) acute gastric tympany; (4) rupture of the stomach; (5) chronic gastric catarrh.

Acute gastritis is stated to be a rare affections in the horse except as the result of irritant poisons. Although not so frequently met with as other affections, still experience teaches us that it occurs more often than is supposed, and the result of post-mortem examinations gives us positive evidence on this point. We must admit, however, that it is very seldom we meet with cases of uncomplicated gastritis, except as the result of irritants, for in all the instances that have come under my notice, there was evidence of cerebral lesions as a complication of the gastric affection. Of course it is quite possible that cases of gastritis may occur and recover, and the affection may not have been recognised.

Those cases which have come under my notice have presented the following symptoms. Pain of a dull persistent character, evidenced by uneasiness and pawing, gradually becoming more acute with alterations in the character of the pulse and a slight rise in temperature, total loss of appetite, tremors of the muscles of the shoulder and forearm, and irregular patches of perspiration. In some instances cerebral complications occur early and the patient moves about the stall in a listless way, finally going down and struggling in a convulsive manner, with symptoms of meningitis. I have encountered a large number of these cases, and in every instance have found evidence of acute gastritis at the post-mortem examinations, and the meninges of the brain opaque and deeply injected.

In *Acute Impaction* of the stomach cerebral complications are usually predominant, but they are manifested

by less violent symptoms, a comatose condition of the animal being more often met with, still I have seen cases of this nature that terminated in convulsions. Post-mortem examinations have revealed a very distended condition of the stomach with solid ingesta, in fact in some instances it was a matter of surprise that rupture of the organ had not occurred. The gastric mucous membrane in some of these cases is acutely inflamed, in others a condition of sub-acute gastric catarrh is present.

Acute gastric tympany is not recognised by some authors, but of its existence as a distinct disease we have ample evidence both clinical and post-mortem. We must admit that it is very difficult to diagnose as symptoms are by no means constant. As a rule the symptoms are very violent in character, pain is very acute and persistent, the pulse becomes weak and almost imperceptible, and respirations greatly accelerated. Fluid medicines are administered with great difficulty, and portion of the drench is often returned through the nostrils. In one case that came under my notice the striking symptom was the animal constantly sitting on his haunches and maintaining this position for some time. Usually drugs administered have little or no effect, and cerebral complications ensue towards the end. The degree of tympanitis present is not excessive, and there is no hardness or tenderness of the abdominal walls. In some of the less severe cases that have come under my notice there were frequent eructations of gas from the nostrils, accompanied by distinct hiccoughs, which appeared to give marked relief to the animal; these cases recovered. The post-mortem appearances are enormous distension of the stomach with gas, the organ extending far beyond its normal limits, it usually contains a quantity of fermenting ingesta.

Rupture of the stomach. Occasionally this lesion may present obscure symptoms and its presence may be overlooked, but the general condition of the patient, the expression of the countenance, the sudden cessation of acute pain, the rapid occurrence of tympanitis, the hardness and coldness of the abdominal walls, and the cold sweats are sufficiently suggestive to the experienced observer, and are so well known that they do not need description here. Vomiting may or may not occur, and in some cases the horse may sit on his haunches, but this is by no means a constant symptom. The occurrence of vomition must not always be regarded as a diagnostic symptom of ruptured stomach, as we see it occasionally during the course of other affections.

(*B*). Does vomiting occur previous to the occurrence of the rupture or subsequent to it? This is a point worthy of discussion, as there is much difference of opinion concerning it. My own opinion is that the rupture is the result of the efforts of vomition, and we have sufficient evidence to show that the act of vomition can occur in the absence of rupture of this organ. Cases of rupture of the œsophagus have occurred in human beings as the result of violent attempts at vomition, and we may safely assume that similar results may occur in the stomach of the horse. Of course in our present state of knowledge the question is simply one of opinion, still we may be able to arrive at a conclusion by studying the matter and comparing experiences and views.

Chronic gastric catarrh gives rise to the usual symptoms of indigestion, but in addition it tends to render the animal liable to recurring attacks of colic. It is quite probable that many of those mild attacks of colic which frequently terminate favourably without any treatment are due to gastric derangements. The number of cases in which we find alterations in the gastric mucous membrane at post-mortem examinations, would lead us to believe that affections of this organ are more common than is usually believed.

Turning our attention to intestinal affections we find a similar difficulty in arriving at a correct diagnosis. Colic is a very convenient term for all varieties of abdominal pain. We believe spasmodic colic to depend on a spasmodic contraction of the muscular coat of the intestine, and many causes are assigned to account for this condition. The sudden onset, the intermittent attacks of pain, the absence of constitutional symptoms, and the rapidity with which the affection yields to treatment are points which are regarded as important in distinguishing simple colic from enteritis. But it is often difficult, if not impossible, to give a definite opinion at the commencement of an attack as to the result. Some cases show the most violent symptoms of pain at the start, and recover, others not giving evidences of a serious character terminate fatally.

Can simple spasmodic colic if unrelieved cause death? The answer to this must be in the negative. We read in Percival of the post-mortem appearances of fatal cases, but we are inclined to believe that enteritis was the cause of death.

Does enteritis occur as a sequel to unrelieved colic, or is it a separate and distinct affection from the commencement? On this point difference of opinion exists, some authorities maintaining that unrelieved colic will terminate in enteritis, others that enteritis is a distinct affection. The fact is that we have a great deal to learn with reference to enteritis in its early stages, as we generally see the cases when the disease is fully established. As yet we cannot decide what is the real cause of enteritis, no doubt many cases are suggested, but as we encounter many fatal cases, not depending on recognised causes, we must confess our ignorance on the subject. We are perfectly well aware of the fact that cases of abdominal pain may continue with acute symptoms for a long period and recover. What was exactly wrong with such cases we cannot decide, but we conclude that enteritis was not present. This leads us to the query—

Do cases of acute enteritis ever recover? Judging by the lesions we meet with at post-mortem examinations we should say that recovery in cases of acute enteritis was impossible. We hear of cases that have recovered but we are sceptical as regards the accuracy of the diagnosis. Experience teaches us that if cases of this affection last for a few days symptoms of septic pneumonia ensue, and I have met with several cases of this nature in which the autopsy revealed a condition of general septicæmia, while the lesions of enteritis were plainly visible in the intestine. We shall not be far wrong in assuming that the general septicæmia arises from absorption of the intestinal contents.

Are there any symptoms that will enable us to differentiate between enteritis, volvulus, intussusception, mesenteric hernia, intestinal calculi, etc.? So far as my experience goes I do not believe that we can give a positive diagnosis in cases of this nature. No doubt the gravity of the symptoms will lead us to give an opinion that the case is likely to have a fatal termination. But we cannot rely on the attitudes and postures assumed by the patient, as they are by no means constant in their significance. The result of post-mortem examinations prove only too often how erroneous our diagnosis has been.

Impaction of the Colon is a condition which we may possibly diagnose as follows. The slow and persistent character of the pain, the tendency of the animal to force the hind quarters against any solid object, and, by rectal examination, the discovery of the distended portion of the intestine containing the ingesta hard and impacted. Many of these cases, however, are complicated with enteritis, and it is impossible to distinguish them from that affection.

What is the commonest cause of death from intestinal affections in the horse? My experience is that acute enteritis claims by far the greatest number of victims. We often hear of cases being diagnosed as twists, etc., but in the absence of post-mortem examinations we do not accept the diagnosis. I do not think it necessary

to refer at length to the various attitudes and postures assumed by horses in the various abdominal affections, as they are perfectly well known to practitioners, and the majority of us will agree that their value as diagnostic symptoms is very little. One symptom, however, I have frequently observed in gastric affections, *i.e.* the horse lies on the sternum with the fore legs stretched out, and appears to get ease in this position. Lying on the back with the limbs resting against the walls, and remaining thus for any period is generally indicative of volvulus or intussusception, or mesenteric hernia, but this must not be too implicitly relied on.

Walking round the box in a circular manner I do not regard as a symptom of any intestinal disease, but it is the physiological effect of large doses of opium or morphia. It can be produced in a healthy horse, and Major F. Smith, A.V.D., was the first to draw attention to the fact that the "circus mode of progression," as it has been termed, was the effect of the opiates administered.

Displacements of the colon are mentioned by some practitioners as being of more frequency than is imagined. Indeed we read of cases in which the affection has been diagnosed, and the matter set right by manual dexterity. Having only on one occasion met with a case of this description I cannot venture to offer an opinion further than to remark that the post-mortem examination revealed an extensive displacement of the pelvic flexure of the colon with enteritis accompanying it. Needless to say I did not diagnose the lesion, and had I done so I could not have relieved the patient.

I have met with one case of diaphragmatic hernia, but am unable to bring forward any symptoms which would lead one to diagnose the lesion.

With reference to the therapeutics of the subject, time will not permit of a detailed consideration. If we are enabled to diagnose the affection we can then adopt rational treatment. In cases of impaction of the stomach the indications for treatment are to remove the gastric contents by the administration of purgatives, and to allay acute pain. Some authorities recommend aloes, but I prefer calomel with a full dose of raw linseed oil, and two ounces of pure terebene. Judging by the post-mortem appearances of this affection we are forced to believe that in severe cases any drug will fail to act on the contents as the walls of the stomach are distended and paralysed. If pain is a prominent symptom, I prefer belladonna to opium as an anodyne.

In cases of acute gastric tympany, that is if we should chance to be able to diagnose it, large doses of terebene combined with ammonia should be given in full doses of raw linseed oil.

The treatment of simple spasmodic colic is usually a simple matter, but a great difference of opinion exists as to whether an active cathartic such as aloes should be given. Those who favour the administration of an aloetic purgative base their practice on the view that colic depends on the presence of irritating ingesta in the intestinal canal, and the rational treatment is to administer a purgative to remove the cause. Two objections can be raised against this treatment. In the first place it is often difficult, if not impossible, to ascertain the *cause* of abdominal pain, and if the case happen to be anything else except simple colic this treatment is simply adding fuel to the fire, and does more harm than good. In the next place aloes takes some time to act even in a horse that is prepared for physic. Again, the administration of aloes prevents the horse working for some days, and the large majority of our simple colic cases go to work the following day. Hence I regard the rational treatment to be the relief of pain by the administration of an anodyne and anti-spasmodic. Every practitioner has his favourite formula for this purpose, and it really matters very little which agents we rely on. The important point is not to give too large doses of opiates, these interfere with the peristaltic action of the intestines, and by masking the symptoms of the disease they may lead to erroneous opinions being given.

My experience teaches me that if the usual doses of opium or morphia fail to give relief from pain there is no use in repeating them, as instead of a narcotic effect a stimulating action of the cerebrum is produced, evidenced by the patient walking around the stall in a circle. The drug that I have found most useful is cannabis Indica (Indian hemp) this produces the desired effect, viz., a freedom from pain, and as I have now a lengthened experience of its value I can speak definitely of its superiority over opium or morphia. We do not like leaving a case, especially at night, unless the animal appears relieved from pain, this effect opiates certainly do not accomplish in protracted cases. Again, in cases which we know from the symptoms are hopeless, it is our duty to smooth the path to death, and for this purpose I know of no drug to equal cannabis Indica. If the case is one which is capable of recovery, this drug will not in any way retard the progress. It is best administered in fluid form, and the usual dose is one ounce for a full sized horse. In some instances marked narcotic effects are produced, but these need not occasion any alarm.

In cases of intestinal obstruction without acute pain great discrimination is required in treatment. If we are satisfied that the case is one of impaction of the colon, with no enteritis present but a paralysed condition of the intestinal walls, then the hypodermic injection of eserene gives excellent results. But we cannot always be positive of the state of affairs, and the administration of eserine too often hastens death, with increased agonies.

I much prefer the administration of enemas by means of the long gum elastic tube. This, although difficult in many cases to manipulate, is perfectly safe and has the great advantage of being absolutely harmless. In a large number of cases I have seen the greatest benefit from its employment; a little patience and tact enabling us to obtain a passage of the impacted ingesta with safety.

With reference to laparotomy, it might be expected that I should say a few words. No doubt abdominal operations look very well described on paper, but there are enormous difficulties to be overcome in actual practice. In the first place the intestines of the horse, by reason of their voluminous size and natural position, offer grave obstacles to the operation. In the next place anything approaching an accurate diagnosis is impossible, and it would be simply absurd to endeavour to do any good by operating in a case of acute enteritis. Again we would scarcely be justified in making an exploratory operation until other means had failed, and in such an instance the recuperative powers of the patient would be considerably diminished. Finally the impossibility of obtaining suitable aseptic surroundings in many instances must be considered.

In conclusion I must thank you for your patience in listening to so lengthy and ill-constructed a paper. I am fully conscious of many errors and omissions, and thoroughly convinced that I have brought nothing forward that is not already well known. But if my efforts are rewarded by an interesting and useful discussion I shall be amply satisfied, believing that "free and fair discussion will ever be found the firmest friend to truth." If the paper does not come up to your expectations do not hesitate to express your criticisms thereon, as the "teachings of failure" are of far greater value to one who has the temerity to bring forward an essay than the gilded dreams of imaginary successes.

The following gentlemen took part in the discussion: Prof. Almond, Prof. Mettam, Prof. Dewar, Messrs. F. L. Gooch, D. Pugh, E. C. Winter, W. Pallin, W. Hunting,

VISIT OF THE N.V.A. TO IRELAND.

For the following most successful series of snap shots we are indebted to Mr. E. P. Edwards, of Mold.

Killarney—The Gap of Dunloe.—The approach to the lakes through four miles of mountain road is made on ponies. The animals vary very considerably in conformation and age. One N.V.A. rider found a two-year-old, but they are much superior to what we expected.

Lunch. The scene of this necessary function is the shore of the Upper Lake, reached after leaving the ponies, by a short walk through the Brandon Estate.

On the Lakes.—The Upper is connected with the Middle lake by a tort stream. The lower lake is much the larger. Islands are dotted here and th mountains surround the whole and the most luxuriant foliage is everywhere.

The Old Weir Bridge.—One of the oldest bridges in Ireland: A mild sensa is experienced when the boats "shoot the rapids" under this bridge to reach meeting of the waters."

KILLARNEY.—THE TORC WATERFALL is considered the finest in Killarney—perhaps in Ireland. Some of our younger members with difficulty reached the base and "stood" for Mr. Edwards.

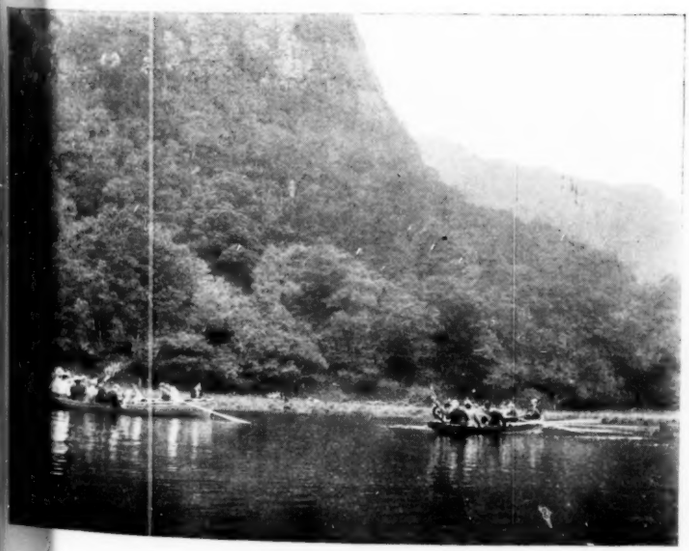
THE WELLINGTON MONUMENT stands in the Phœnix Park, ov over 200 feet in height. The park is more than four times as large as Hyde P and very beautiful.

ON THE BOAT.—The behaviour of the Irish Channel was all that could be desired—hence the joyous expression of the group

SACKVILLE STREET.—The Monument to Daniel O'Connel is a mas piece of Sculpture. Not far from it were the hotels in which the majority tors to the N.V.A. stayed.

THE GAP OF DUNLOE.

LUNCH.



ON THE LAKES.

THE OLD WEIR BRIDGE.

MUCKROSS ABBEY.—This venerable ruin is embosomed in beautiful scenery. It dates from 1400.

W. A. Byrne, T. Olver, G. A. Banham, H. Hunter, P. J. Howard, A. J. Beckett, W. Robb and J. McKenny.

The annual supper was held immediately after the meeting, at which the members and guests were present.

EXTRACTS AND NOTES.

ON PSEUDO-TUBERCULOSIS.

Being address delivered at the Annual Congress of the Royal Institute of Public Health, held at Aberdeen 2nd to 7th August, 1900.

By JAMES M'PHAIL, ESQ., M.R.C.V.S., Inspector of Markets, Edinburgh.

Mr. Chairman and Gentlemen,—The object of my paper to-day is to consider shortly with you the various conditions which may, and frequently are, mistaken for those due to tuberculosis. At the present day a knowledge of these lesions is rather important, as only too often any caseous degeneration accompanied with a tendency to calcareous deposition is labelled tubercle, and without any further investigation the decision is acted upon.

Unfortunately—or rather fortunately, shall I say—those interested in these condemnations are awakening to the fact that dogmatic decisions may not be altogether correct, and they are now asking for, and have a right to demand, verification of everything stated ; an instance in point being the carcase seized in London a short time ago, and condemned for tubercle, which was subsequently returned to the owners. The mistake which was made was not to be wondered at, because there are stages in some diseases which may be mistaken for tubercle, not only naked eye but even histologically, for it is difficult to say what the typical structure of a tubercular nodule is, for there are periods in many new formations at which there is infiltration of leucocytes, and even giant cells.

There is no doubt but that the tubercle bacillus and other pathogenic germs work along a similar line to a certain extent ; they set up a form of inflammation, the character of which depends upon the virulence of the bacillus, and on the resistant powers of the invaded subject.

The conditions to which I wish to draw your attention may be summarised under the following heads :—

(1) Coccidia disease.
(2) American sheep disease.
(3) Aspergillar pneumomycosis.
(4) Bacterial necrosis of the liver.
(5) Actinomycosis.
(6) Pseudo-tubercle in sheep's lungs.

Coccidia Disease.

The first condition, gentlemen, and also one of very common occurrence, is the lesion found in the rabbit's liver caused by the sporozoa or coccidia. The lesions seen in this disease are small nodules in the liver, greyish white or yellowish in colour from the size of a bean to that of a hazel nut. These nodules are filled with caseous or sometimes purulent contents, in which the *Coccidium oviformæ* is found in large numbers. According to "Raillet" these organisms pass into the bowel, and from thence probably as amœboid masses into the liver ducts, where they undergo a further development. They first form a capsule around themselves, they then divide into four masses or spores, from each of which is developed a C-shaped hyaline rod, the cavity of which is occupied by closely packed granules, and they remain as such until they reach another host.

In the stomach of the new host they become free amœboid cells, and either penetrate into the intestinal epithelium (*Coccidium perforans*) or reproduce their hepatic form. Those which penetrate the intestinal epithelium cause its destruction, and sometimes ulceration and necrosis of the part. They sometimes form a false membrane similar to diphtheria in fowls. I have also seen this condition in the throat of a sheep.

In relation to public health, rabbits suffering from this disease should be condemned, as this condition is also found in man, in whom it may be reproduced. This condition should also be carefully noted, owing to the very common use of rabbits for inoculating purposes.

The second condition simulating tubercle is—

American Sheep Disease.

The principal lesions seen in this disease are found in the bowels and mesentery. Studded all over those parts are small pearly-looking nodules from the size of a pin-head to that of a hazel nut. Hundreds of these nodules may be present, and when cut into are found to contain a caseous, but oftener greenish matter. This, however, when examined microscopically is found to contain the larval form of a worm. They measure about three to four millimetres in length, and are the immature form of the Œsophagostome of Columbia which has its habitat in the colon of adult sheep. The worm itself is twelve to fifteen millimetres long.

This disease is of frequent occurrence in adult sheep in the south of the United States, and is more particularly observed in the back end of the season. Since the closing of our ports against foreign cattle, this condition is only seen at those ports of landing where they slaughter the animals on arrival. In connection with this disease, the sheep do not seem to suffer any inconvenience, and the carcases are well nourished.

The third condition to which I would draw your attention is—

The occurrence of Nodules filled with caseous contents in a Sheep's Lungs.

These nodules vary in size from a linseed to that of a pea. They may exist in large numbers, or may be even disseminated throughout the lung tissue. This condition, seen with secondary infection of the liver and lymphatic glands, is rather suspicious. As far as I can make out these changes in the lungs are caused by the *Aspergillus fumigatus*, whose presence may be demonstrated. It occurs in greyish tufts, the coccidia are round, smooth, and mostly pale and colourless. The mode of infection is probably from vegetable dust. This disease appears to develop in weak animals, and the morbid changes are acute, as both the leucocytes and connective tissue corpuscles undergo a very rapid breaking down. In this way the centre of the nodule is rather purulent and caseous.

The fourth condition is—

Bacterial Necrosis of the Liver.

This disease, seen in several of the lower animals, may also be mistaken for tubercle, especially if it should occur, as I have seen it do, along with an invasion of the chest cavity by the lymphatic stream of the organisms which cause this disease. In animals suffering from this disease, on the abdomen being opened, attention is generally attracted to the liver. The organ is greatly enlarged, and scattered throughout the liver substance are roundish nodules which project above the level of the capsule. Section through the liver will show that these nodules are scattered throughout the hepatic tissue. They vary in size from the area of a sixpence to that of half-a-crown. The difference between these conditions and that of tubercle is, that though the nodules are cheesy-looking, yet they are tough on section, and they

do not often soften as in tubercle, neither is there any tenndency to calcareous deposition.

The active cause of this condition is a bacillus which may be obtained at the margin of the nodules. In the case I mentioned, which was recorded in *The Veterinary Journal*, the lesions were also found on the pleuræ, both parietal and visceral, but not in the lung tissue, and there is no doubt but that the bacilli spread by the lymphatics through the diaphragm.

The last condition I intend touching upon before going on to pseudo-tubercle in the sheep's lung is one which some may think I should have left out,—I mean

Actinomycosis.

But, gentlemen, this condition closely resembles tubercle when all the organs of the body are invaded, and it needs the microscope to satisfactorily determine which it is. I may say I have had opportunities for studying the lesions produced by the ray fungus, and some of them are remarkably alike to tubercle. One case I may mention; it was under observation for six weeks (it was in one of the city byres, and was ordered out under the Public Health Act). Within that period the nodules had increased from being just discernible to distinct lumps fused together and gravelly to the touch. The milk of this cow had been examined again and again with negative results. When this animal was slaughtered, the masses in the udder were found to be composed of fibrous granulation tissue, studded with pustular nodules, with yellowish calcareous particles, and very gritty on section. The lungs in this case were also affected. They contained minute nodules, not so calcareous and more purulent looking. The pleura were the seat of clusters of growths similar to the grape form of tuberculosis. The probability is, that if this cow had come into an ordinary slaughter-house, it would have been certified and condemned as tubercular.

Pseudo-tubercle seen in Sheep's Lung.

This disease, gentlemen, is often confounded with and described as occurring with "hoose" or parasitic bronchitis, and it is said to be difficult to distinguish the relative symptoms of each disease. This, however, is not correct, for they are two distinct diseases, and caused by at least two distinct worms:—

The Strongylus Filaria, causing an acute bronchitis, with the lesions confined to the bronchii and neighbouring parts, and the—

Strongylus refuscens, causing a pneumonia, and having its lesions in the parenchyma of the lungs. I may say at this stage that the term pseudo-tubercle as applied is absurd, as there is present here a distinct process having a nematode worm as the factor in the formation of the nodules. Why should one be called parasitic bronchitis, and the other pseudo-tubercle? Why not parasitic pneumonia?

In the lungs of sheep suffering from this condition the lesions seen may be divided into two kinds:—

The first form occurs as greyish-yellow patches irregularly angular in shape, and projecting slightly above the surrounding tissue.

The second form is small nodules, about the size of rabbit shot, and even larger; they are disseminated throughout the pulmonary tissue, and being equally distributed in both lungs and very similar to miliary tubercle.

There is considerable difference of opinion as to the identity of the worm which causes these conditions, and as the time is short I cannot go over the ground, but it is generally agreed that the first condition is caused by the *Strongylus refuscens*, and we will now consider the condition and the active cause of it.

In Professor Raillet's work the *Strongylus refuscens* is thus described:—round-worm, slender body, reddish brown in colour, head not winged, mouth surrounded by three papiliform lips; the *male* is 18 to 28 millimetres long; the *female* 25 to 35 millimetres long, its tail is a blunt point, its vulva is situated immediately in front of its anus. The eggs are ellipsiodal, and are 75 to 120 micro-millimetres long, by 48 to 52 mm broad, As you can see from the specimens before you, the lesions are very easily seen. They are situated under the pleural surface, and project above the level of the surrounding tissue; they range from the sixteenth part of an inch to the size of a large nut; they are either soft and elastic or firm in consistence, and are generally found towards the upper edge of the lung at the apex, and along the under edge, but they never occur in the depth of the lung substance. If one of these patches is cut out and placed in water it will float, when cut into they yield a milky fluid; if a scraping is taken the eggs and the embryos of the *Strongylus refuscens* are seen under the microscope; the embryos will be noticed to exhibit movement.

A section through one of the patches shows the lung tissue obliterated, and the alveoli completely filled up by an accumulation of leucocytes, and in the midst of them eggs and embryos in various stages of development.

The second form is the one which most closely resembles miliary tubercle, and is of rather common occurrence, especially in the lungs of black-faced ewes; in the abattoirs in Edinburgh we find it difficult to get an adult lung free them. The lesions are found disseminated throughout both lungs, which may be very severely invaded. They are about the size of rabbit shot, greyish in colour, and firm on pressure. They are difficult to enucleate from the surrounding tissue, and on section they may be gritty owing to calcareous deposition, or they may be in a caseous condition. If a fresh and firm nodule be separated from the tissue, and cut and squeezed, and the product examined under a microscope, it will be found to contain a long filiform worm coiled upon itself.

A section of one of these nodules shows that the pulmonary alveoli are filled with leucocytes; in the centre of them is this twisted filiform worm coiled upon itself, the walls of the alveoli are enlarged with cellular infiltration. The lung tissue between the nodules does not show much change. As to the identity of this worm, or rather embryo, as I have already stated, there is a considerable difference of opinion, and I think you will admit there is ground for it, as the microscopic and naked eye appearances are so different, for in the first condition you have eggs, embryos, and sometimes the adult worm, while in the second form only an embryo of an undetermined worm.

Professor M'Fadyean, in his *Journal of Comparative Pathology and Therapeutics* for the year 1894 writes an excellent and instructive paper on this subject. The pity is that he was unable to give a more decided opinion on the embryo in question.

In relation to Public Health this condition of the lung is very important, if we remember the harmful nature of these round-worms, and those so closely allied to them. In the paper which I alluded to Professor M'Fadyean suggests the possibility, from the distribution of the tubercles, that they may have formed round parasites developed from eggs arrested in the pulmonary arterioles, like the pseudo-tubercles caused by the *Stronglus vasorum* in the dog. In his *Veterinary Medicine* Principal Williams also states that he has on two occasions seen the *Stronglus filaria* in the cavities of the heart and blood-vessels. Though this is only a suggestion, I would ask you, gentlemen, to note that in the specimen of the generally infected lung before you there are numerous centres of infarction, triangular in shape, and these contain an embryo, or rather a developing embryo. If such should be the method of infection,

greater attention must be paid to the lungs of animals suffering from this disease. I most emphatically say that sufficient attention is not given to them, as these lungs are openly exposed for sale for human food in many of our cities, and they most certainly ought not to be. In Edinburgh we are most careful to condemn these lungs, and most rightly so, for their probable harmful nature is not generally known; I say probable, because in the present undecided state of this worm's identity and its life-history we do not know what the next host of it is, and we must not give man the chance of posing in that undesirable position. Bearing on this point it is interesting to note that Colin records the presence of the *Strongylus refuscens* in a cat's lung, and traces its presence to the eating of infected sheep's lungs; he also states that the embryos of strongyles preserve their vitality in water for two months. When we consider the opinions and observations of these authorities I think that these lungs should be condemned, and that in every case.

THE HORSE AND EMPIRE SOCIETY.

Sir,

I enclose a circular of the Horse and Empire Society which is being formed, the object being to bring before the Government the great importance of providing an adequate supply of remounts for the Army.

Of the two schemes proposed the first appears to be best and the most deserving of support. The second will hardly commend itself to horse owners.

Mr. Phillpott Williams, in reply to a letter of mine pointing out the obvious objections to the taxation scheme, says: "He is not sentimental about either of his schemes," and as his objects are wholly good I think they will interest your readers.—Yours etc.,

J. STEWART WOOD.

Walton Lodge, Parkstone, Dorset,
September 17th.

THE HORSE AND EMPIRE SOCIETY.

Membership One Shilling.

The object of this Society is to bring clearly before the notice of the electors, and the country generally, the question of our horse supply, and to protest against the policy of neglect adopted by both parties of the State towards it.

Also to express a hope that a Special Commission be appointed to go into the subject, which shall take the evidence of breeders, practical farmers, generals of experience, and experts generally, with a view to thoroughly examining the question and coming to the best result obtainable.

When Mr. Phillpotts Williams first began to take up the subject last March, he thought that the politicians would have been only too glad to welcome any effort that was made to bring the Government in touch with the great breeding experts on this vitally important question, and that the lessons of the present war would have made it clear that an effort ought to be made in that direction. But it was not so. The Hunter's Improvement Society answered the call at once, and showed itself willing to render assistance to the Government. But the politicians and leaders on both sides of the House made it clear that they did not mean to touch the subject. It is necessary, therefore, to go to the public themselves and invite an expression of public opinion, and it is with this idea that the Society has been started.

The two schemes which Mr. Phillpotts Williams has sent into the Hunter's Improvement Society (a Society that contains some of the best men in the country) are—First, a national stud run by the Government and managed by the Hunters' Improvement Society, and secondly, a great reserve scheme for a reserve of horses in time of war.

The national stud scheme was formulated on the idea that it was not advisable to breed horses for foreign armies with English money, and that if the country was to be asked to find money for a Government scheme it should be quite clear that the English, and the English alone, got the benefit of the money spent, and that no one else should come in and buy the horses that were bred under that scheme. If you once get this into your head the private enterprise schemes, where the horses are bred with the assistance of Government money and sold in the open market, are no use at all, as the foreigner invariably steps in, and the Englishman pays for the system and the foreigner buys the horse. This is the grievance with the two sums already mentioned. The cost of starting a national stud would of course be large to start with, though it is doubtful if the annual cost would be more than we are paying at present. A large tract of land would have to be bought and a stock of mares. But there is another charge that ought to be put against it, and that is the charge of a hundred millions ransom to a foreign Power if we were badly beaten. For our part we would rather have a national stud. Another reason is that a theory of breeding at home is necessary for mobility in war, and that a troop horse properly bred to the type required, and one that can stay and carry weight, is far better in a trying march or dashing flanking movement than one that is bred in an indiscriminate way. It is the best horses of a good system that we want for the cavalry, not the worst of a bad, and as the mobility in the hunting field is the same as the mobility in war, it is only reasonable that the question should be placed in the hands of the Hunters' Improvement Society.

The other scheme is a scheme for a gigantic reserve of sound working horses that could be called up at a week's notice in time of war, which would not be very often, it may be observed, as the present war is the only one in which the horse question has come up since the Crimea, which was in 1854. The idea is that all horses throughout the country should be taxed 10s. or £1 a head per annum, and those who were prepared to sell their horse to the Government in time of war at £40 a horse should be let off the tax. This would enable the poorer people to get off the tax, if they wished it, and get the value of their horse if sold, while the richer people who kept a more valuable class of cattle could well afford to pay the tax. Each could do as they liked. The opportunity to get off the tax for those who wished to do so would be continual, whereas the necessity to sell would not be very often. The scheme would be a certainty close home, and not an uncertainty the other side of the seas, with the probability of hostile navies attacking you.

SPREAD OF FOOT AND MOUTH DISEASE.

The following order was issued last week by the Board of Agriculture:—

"I am directed by the Board of Agriculture to draw the particular attention of your local authority to the fact that within the past six weeks outbreaks of foot-and-mouth disease have occurred in the East Riding of Yorkshire and in Denbighshire, whilst to-day the disease has been declared to exist in the neighbourhood of Melksham, in Wiltshire. The Board cannot but regard the fact that the disease has appeared within a few weeks in districts so widely separated as an indication that foot-and-mouth disease has in all probability existed in unknown centres for some time past, and they fear that unless the utmost vigilance is exercised by local authorities a grave danger of a widespread epidemic may arise.

I am, therefore, to ask you to be so good as to at once call the attention of your local authority to the matter, and to ask them to use every possible means to obtain immediate information as to the appearance of any suspicious case of the disease in their district, and in the event of such reports being received to at once put in force and rigidly carry out the provisions of the Foot and Mouth Disease Order of 1895.—I am, etc., T. H. ELLIOTT, Secretary."

A Chippenham correspondent telegraphs that the Secretary of the Board of Agriculture has sent notice to superintendents of police that, as foot-and-mouth disease has been declared to exist at Whitley, near Melksham, Wilts, the Board have passed an order prohibiting the movement of cattle, sheep, goats, or swine out of, into, to, or along highways or thoroughfare in a district comprising parishes in the divisions of Chippenham, Calne, Devizes, Melksham, Bradford, Trowbridge, Whorwellsdown, Westbury, Warminster, Weston, Kilmersdon, and Frome, and the boroughs of Chippenham, Calne, and the city of Bath. Various markets will in consequence not he held.—*The Times.*

THE CELLULAR PATHOLOGY OF TO-DAY.

An Address delivered in the Grande Salle of the Sorbonne, Paris, to the Thirteenth International Medical Congress,

By SIR J. BURDON-SANDERSON, Bart., M.D., F.R.C.P., F.R.S.

Regius Professor of Medicine in the University of Oxford

Gentlemen,—May I be permitted first of all to express to you my high appreciation of the honour you have conferred on me by inviting me to address you on so important an occasion. I desire at the same time to thank our French colleagues on my own behalf and on that of the English members of the Congress for their friendly welcome.

Forty-seven years ago, after graduating in Edinburgh, I repaired to Paris for the purpose of completing my medical education. At that time Paris afforded facilities for clinical study which were not to be had in England. To myself it was an additional inducement that there were in Paris well-organised laboratories for practical instruction in chemistry, histology, and physiology.

Moreover the period was one of great activity and progress. Claude Bernard had recently achieved his greatest discoveries, those relating to the functions of the liver, the pancreas, and the processes of digestion.

Brown Séquard had just demonstrated the functions of the vaso-motor nerves and was already engaged in his investigations of the functions of the spinal cord. It was to Paris that every student repaired who desired to become acquainted with the most recent advances in physiology.

The progress of pathology at the time we are considering was no less remarkable than that of physiology. It was then that the "cellular pathology"—the doctrine which has so powerfully influenced the progress of scientific medicine—was originated by Virchow. Nearly 20 years had elapsed since the discoveries of Schwann and the promulgation of the "doctrine of the cell." The science of histology had been developed by Charles Robin in France, by Bowman in England, by Henle and above all by Kölliker in Germany. Of these remarkable men one only is still with us. To Kölliker we can to-day address our congratulations on a life-work of unparalleled fruitfulness. It was from Kölliker's University' Würzburg, that the "cellular pathology" emanated. The book which bore this title was not published until Virchow had migrated to Berlin (in 1856), but since 1847, when the first volume of the "Archiv" appeared, the doctrine had been step by step set forth. A few years later (1862) von Recklinghausen made the capital discovery that the colourless corpuscle of the blood was not, as had been previously thought, a vesicle containing a nucleus, but rather an organism full of life and movement which possessed the wonderful faculty of incorporating minute particles suspended in its liquid environment. Five years later (1867) another pupil of Virchow, Cohnheim, made the further discovery that pus can be formed by the emigration from the blood-vessels of these same corpuscles, but it was not until after Cohnheim's death that the key to the mystery which he had in vain sought to penetrate was discovered by Leber in the analogy of the phenomenon in question to that to which the botanist Pfeffer had given the name of "chemotropism."

I have adverted to these discoveries relating to the functions of the cell for the purpose of setting forth the relations between the cellular pathology of to-day and the cellular pathology as originated by Virchow in the "fifties." There can be no doubt that the tendency of pathological research has undergone a marked change since that time. Formerly the histological characters of morbid processes—of inflammation, of tuberculosis, and of other organic diseases—were the subjects of special interest. Now it is the microbe. It would, however, be a mistake to suppose that the new science of microbiology has hindered the progress of histology. On the contrary, histological research has never been pursued with more zeal and success than during what may be called the bacteriological period (1880 to the present time). I need only refer to the discovery of karyokinesis (1873-82) and to the wonderful advances in the microscopical study of the nervous system which we owe to Golgi, to Cajal, and to the army of artists in histology who are now working in the same field.

There are at the present moment few who doubt the value of bacteriological diagnosis or of serum therapeutics. These are the practical, life-saving results of bacteriological research. But it is not in these directions that micro-biology is at present exercising its chief influence on the science of medicine; it is rather that it has given us a new and more comprehensive idea of the physiological functions of the cell and consequently of cellular pathology. Pathology is no less fundamentally cellular than it was when Virchow so designated it in the title of his book. But the word "cellular" has now a wider signification, for it comprises not merely histological changes, but the chemical reactions which subsist between the cell and its environment. Formerly we regarded each kind of cell as having a single special function proper to itself, but the progress of investigation has taught us that each species of cell possesses a great variety of chemical functions and that it may act on the medium which it inhabits and be acted upon by it in a variety of ways. Thus, for example, we think of the colourless corpuscles of the blood (or, as we now call them, leucocytes) not merely as agents in the process of suppuration or as typical examples of contractile protoplasm, but rather as living structures possessing chemical functions indispensable to the life of the organism. Similarly we have come to regard the blood disc, which formerly we thought of merely as a carrier of hæmoglobin, as a living cell possessed of chemical susceptibilities which render it the most delicate reagent we can employ for the detection of abnormal condition in the blood.

The tendency of recent research is to show that the reactions to which I have referred as chemical functions of the cell (action of the cell on its environment—action of the environment on the cell) are the work of ferments—intrinsic or extrinsic—which are products of the evolution of the living cell and there-

fore to which we may apply the term "enzymes"[3] devised for them by the great physiologist whose loss we at this moment so bitterly deplore. Can we go a step further and accept the suggestion which presents itself that *all* the functions of the cell are due to the agency of enzymes? The question is one which we are bound to answer with great reserve. The utmost that can be said is, that if we exclude from consideration the functions which Bichat designated as functions of animal life—in other words, the functions proper to the nervous system and under its immediate control—we may as regards organic functions accept the suggestion as probably true. Recent researches have plainly indicated that in the case of the disease-producing microorganisms, the specific functions which for years we regarded as proper to, and inseparable from the cell, belong essentially to the enzymes which they contain. It has been further shown that similar statements can be made as regards ferment-processes which differ widely from each other and no less widely from those induced by bacteria. Thus, if I may be allowed to quote the striking language employed by M. Duclaux: "There are ferments which by slipping a molecule of water into the midst of a complex molecule divide it into two or three more simple ones, as an iron wedge splits a block of wood, and others which can reconstitute the block by reuniting its dissociated elements. Again, there are enzymes which conduct oxygen to the bodies on which they exert their action," and others "which break up a chemical compound as the explosion of a shell shatters a wall." So that in the domain of microbiology the enzyme may in a certain sense be said to have "dethroned the cell." For if, as M. Duclaux continues, we can extract from the cell a substance which breathes for it, another which digests for it, another which elaborates the simple from the complex, and finally another which reconstitutes the complex from the simple, the cell can no longer be considered as *one*, but rather as a complicated machine, the working of which is for the most part dependent on enzymes, which, however numerous and varied may be the processes in which they are engaged, all follow and obey the universal law of adaptation and all contribute to the welfare and protection of the organism.

Admitting that we may provisionally delegate the function of the cell to its enzymes the question may still be asked whether by doing so we acquire a better understanding of organic life. The answer may, I think, be easily given. The only way in which we can explain a vital phenomenon is by determining its non-vital conditions. The essence of physiological experimentation consists in the elimination of the mystery of life.[5] As regards each chemical function of the cell, taken separately, the first step towards this result is to reproduce *in vitro* what one has observed *in vivo*. Even though it may be impossible to state the nature of the process in chemical language, it is a great advantage to be able to study its relation to external conditions which have nothing to do with its vital origin. In illustration of this we may take a physiological process in relation to the nature of which the vitalistic idea has held its ground with great pertinacity—the alcoholic fermentation. It was not until 70 years had elapsed since the discovery of the yeast-plant, that Buchner, by employing more effectual methods than had been devised by his predecessors was at last able to prove that the alcohol-producing enzyme can be separated from the zymogenetic cell—*i.e.*, that that the chemical process which has been the source of so much good and evil to the human race may be brought about without the direct intervention of the living protoplasm. Another instance of nearly equal interest is that of the recent discovery and investigation *in vitro* by M. G. Bertrand of the ferments on which certain plant-cells depend for the power which they possess of quasi-respiratory oxidation and the experimental proof which he has given that this is effected by the agency of an oxidising enzyme. It cannot be said that in either of these instances the way in which the enzyme acts can be *explained*.[7] In each case a process hitherto regarded as vital has been shown to be chemical, but the mode of action of the enzyme cannot as yet be stated in chemical language, so that the value of the discovery lies in the biological importance of the process and the new power which the physiologist has gained of subjecting it to exact investigation. In furtherance of that investigation all that chemistry can do at present is to furnish us with efficient technical methods, but eventually—in the course of the next century—there can be no doubt that the purely chemical problems relating to the action of ferments which in the course of the next few years the biologist will one after another submit to the chemist will receive their answers. In the meantime let us avoid skating on thin ice. The value of the generalisation that each chemical function of the cell is the work of an enzyme, however admissible it may seem, depends on the number and importance of the phenomena to the elucidation of which it has been successfully applied. So long, for example, as a process of such fundamental importance as that by which the plant cell with the aid of sunlight is capable of elaborating carbohydrate out of material derived from the atmosphere has not been shown to be zymotic, we must carefully guard against giving the theory anything like the authority of a biological law.

May I now, by way of sequel to the general considerations relating to the chemical functions of cells which have occupied our attention, say something of their bearing on what may be called the "cellular pathology" of today, the relation of which to that of 40 years ago I have already indicated. The examples to which I referred just now related to the physiology of the plant cell. Our pathological problems relate to the constituent cells of our own bodies, the chemical functions of which present much greater difficulties to the investigator. It is not difficult to understand why more progress has been made in the investigation of isolated cells, such as coloured and colourless blood corpuscles and the nucleated cells which constitute the adenoid tissues, than in those relating to the constituent cells of organs. From the study of the cells of adenoid tissues we have learned that the nucleus not only governs the development of the cell but that it has chemical endowments which distinguish it from the protoplasm which surrounds it. I need only mention in this connection the researches made by my friend Sir L. Brunton more than 30 years ago in Prof. Kühne's laboratory, and subsequent work of Miescher the discoverer of nucleine, and the much more extended investigations of Prof. Kossel, of Marburg, which have given us such exact information as to the products of decomposition of nuclear substance.

(3) The word "enzyme" was introduced by Kühne in 1874. It has been adopted as a general term for soluble ferments which originate from cells by Professor J. R. Green in his important work on Fermentation. For this purpose it is much to be perferred to the word "diastase," which is used by Duclaux and other French writers in the same general sense.

5. That is, so much of the mystery as depends on vital conditions. Many physical and chemical processes—*e.g.*, the production of muscular force and, as will be seen further on, the assimilation of carbon by plants, remain mysterious even after the vital element has been eliminated. The physiologist, however, has done his part and can hand over the unsolved problem to the chemist or physicist, as the case may be, with the assurance that eventually the explanation will be got at.

7. In physiology and pathology we use the words "explained" and "understand" in a much stricter sense than that in which they are used by some popular writers on biology. To prove that what happens is in accordance with the general law of adaptation is not to explain it.

As regards the coloured corpuscles, important discoveries have been made during the last few years in two directions. The have been studied first in relation to their physical properties, and particularly in relation to their osmotic relations to organic and inorganic substances in solution. I need only remind you of the work done by Professor Hamburger of Utrecht and by Dr. Hedin of Lund in Sweden. Still more interesting results have been obtained by investigations conducted in France and Germany relating to the physiological and chemical conditions which, on the one hand, render them capable of resisting the "globulolytic" action of the blood plasma, or on the other hand, compel them to yield to that action.

As the subject of hæmolysis at the present moment is receiving much attention, both here and elsewhere, I may be permitted to devote a few moments to its discussion. The fact that the blood discs are in general destroyed when they are introduced into the circulation of an animal of a different species has been long familiar to us. A few years ago it was demonstrated by Buchner that the hæmolytic power has its seat in the plasma and consequently in the serum. Still later, M. Bordet of the Pasteur Institute made a remarkable discovery that the hæmolytic process now in question is identical with the well-known "bacteriolysis" which takes place when pathogenic micro-organisms are acted on by the serum of an immunised animal. By a numerous series of observations *in vitro* and *in vivo* he showed that the lytic substance in the serum which acts on the vibrio of cholera and that which acts on the blood discs are identical, provided that the serum also contains a *tertium quid*—a certain substance which has a specific antagonistic relation to the *materies morbi* in the one case, to the "alien" blood-disc in the other. In other words the intruding blood-disc acts, and is acted upon, exactly as if it were an infective agent. To this specific body M. Bordet gave the name of "*sensibiliser*" because it renders the blood-disc or the specific micro-organism susceptible to the attack of the normally present hæmolytic ferment. The "*sensibiliser*" serves, so to speak, as a key, by the application of which the ferment is enabled to penetrate into the interior of the blood-disc so as to act on its susceptible constituents. And inasmuch as it appears to be proved that every blood-disc is liable to be affected by the presence of a plurality of substances possessed of the specific *intromittent* function, it seems as if one must admit that it must possess a corresponding number of specific susceptibilities; for if there are several keys, each differing from all the rest, there must be as many locks to which they severally fit.

It is apparent that these beautiful researches have a special interest in relation to the occurrence of hæmolysis as a symptom—*i.e.*, to the solution of the blood-discs which occurs in a variety of morbid states—but it is by the help which they are likely to afford us in our efforts to understand the origin and essence of disorders of nutrition, that the facts which have been disclosed relating to the chemical physiology of the blood-cells are most likely to be of service. In the action of the liquor sanguinis on alien blood-discs we have an exemplification of the way in which ferments may play a part as the instruments by which the constituent cells of different organs may influence each other for good or evil without coming into contact. When we turn from the blood-discs and leucocytes to the constituent cells of organs, it is obvious that the difficulties of investigation are infinitely greater. The suggestion which naturally presents itself is that the actions on each other of the constituent cells of different organs within the body of the same individual, are brought about in a similar way to those which we have learnt to recognise in the actions of indigenous blood-corpuscles on aliens; that is to say, that among the metabolic products which each species of cell throws into the blood-stream or lymph-stream there are specific substances which are analogous to M. Bordet's "*sensibilisers*" in so far that by their presence or absence the prosperity or decadence—the functional activity or the contrary—of other cells is directly affected. Vague as such language appears it may serve to indicate the lines along which we must work in our efforts to solve some of the most important problems of cell-pathology. In all dystrophic conditions—*e.g.*, in the functional disorder of muscle and of liver-cell which renders these structures incapable of holding carbohydrate in reserve—in the autotoxy which manifests itself in the graver form of diabetes—in the "acid intoxication" which is associated with acute disintegration of the liver—in morbid conditions attributable to "internal secretions"—in all of these instances we have to do with disorders of the chemical functions of cells. In all our endeavours to ascertain the immediate and determining causes of these disorders we may with no less advantage at the present time than formerly allow ourselves to be guided by the principles and methods of the cellular pathology as Virchow taught them nearly half a century ago. The principles remain unchanged; as regards the methods, we have only to add to those we then learned the newer ones which the progress of knowledge has placed within our reach.—*The Lancet.*

Messrs. Frank Lloyd and Sons Wrexham Sales.

Messrs. Frank Lloyd and Sons' great October horse and foal show and sale at Wrexham is announced for October 2nd, 3rd, 4th, and 5th. The entries close by Saturday's post. These are about the most important sales for the year. Sixty guineas is offered in prizes for various classes, including a 15 guinea challenge cup for the best wagon mare or gelding. The auctioneers have had numerous enquiries, and anticipate a good demand. 540 guineas was paid for a three-year-old Hackney at this sale last year, and 145 guineas for a wagon gelding. Further particulars will be found in our advertising columns.

CORRESPONDENCE.

"LET RIGHT BE DONE."

Sir,

It seems to me that those gentlemen who are so desirous of altering the decision of our Council in this case are decidedly guilty of unprofessional conduct themselves. What is the use of electing a Council if we do not loyally support them? If they have done wrong, surely we have our remedy at the next election. Is this not a sample of the brotherly love in the profession? It certainly proves the absurdity of our motto, *Vis unita fortior.*

Our Council have dealt leniently, perhaps too leniently, in allowing one black sheep to remain in the flock. Does it not remain for us, the ninety and nine, to prove to the public, and I need hardly add to ourselves, that we need no repentance, a condition which I am afraid will never be arrived at in the Veterinary profession, and to go somewhat further, no Council is likely to produce.—Yours faithfully,

GEORGE UPTON.

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Messrs. Robert Stewart, E. Wallis Hoare, G. Upton, G. E. King, J. Stewart Wood, T. W. Latter, Rev. F. Lawrence. "Erin." *Journal of Comparative Medicine and Veterinary Archives* (Philadelphia, Aug.) *Agricultural Journal* (Cape).